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1	BRS	747	264/245.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
2	BRS	349	264/254.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
3	BRS	341	264/246.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
4	BRS	1882	264/255.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
5	BRS	1	"5009387".PN.	USPAT
6	BRS	1	"4923664".PN.	USPAT
7	BRS	1	"4871497".PN.	USPAT
8	BRS	1	"4787597".PN.	USPAT
9	BRS	1	"4700518".PN.	USPAT
10	BRS	1	"4250127".PN.	USPAT
11	BRS	1	"4247508".PN.	USPAT
12	BRS	1	"4213929".PN.	USPAT
13	BRS	3	4120948.pn.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
14	BRS	7	"5576031"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
15	BRS	1	"4153401".PN.	USPAT
16	BRS	1	"4100304".PN.	USPAT
17	BRS	1	"3764646".PN.	USPAT
18	BRS	1	"3296675".PN.	USPAT
19	BRS	1	"2874649".PN.	USPAT
20	BRS	1	"2552090".PN.	USPAT
21	BRS	1	"2212863".PN.	USPAT
22	BRS	1	"2115249".PN.	USPAT

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25	BRS	1	"1137595".PN.	USPAT
26	BRS	1	"0995206".PN.	USPAT
27	BRS	1	"0957187".PN.	USPAT
28	BRS	1	"0797945".PN.	USPAT
29	BRS	0	(425/\$.ccls. or 264/\$.ccls.) and ((mould or mold) adj2 (core or insert)) same (pressure adj ridge)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
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31	BRS	1	(425/\$.ccls. or 264/\$.ccls.) and (core or insert) same (sealing adj ridge)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
32	BRS	239	(425/\$.ccls. or 264/\$.ccls.) and (core or insert) with (ridge)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
33	BRS	1153	(425/\$.ccls. or 264/\$.ccls.) and (core or insert) with (seal)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
34	BRS	810	425/468.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
35	BRS	9	((425/\$.ccls. or 264/\$.ccls.) and (core or insert) with (seal)) and 425/468.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
36	BRS	13	(pressure adj ridge).ti.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
37	BRS	15	"4743443"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
38	BRS	227	flange same insert same placement	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
39	BRS	14	(425/\$.ccls. or 264/\$.ccls.) and (flange same insert same placement)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
40	BRS	52	425/468.ccls. and flange	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB

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42	BRS	371	264/268.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
43	BRS	809	264/267.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
44	BRS	123	264/260.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
45	BRS	1221	264/261.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
46	BRS	320	264/247.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
47	BRS	6	264/247,255,246.ccls. and (key.ti. or keyboard.ti. or button.ti.)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
48	BRS	102	264/247,255,246.ccls. and (mold adj core)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
49	BRS	1	"3184527".PN.	USPAT
50	BRS	25	"4573258"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
51	BRS	66	264/271.1.ccls. and 264/255,247,246.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
52	BRS	60	264/267.ccls. and roll	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
53	BRS	50	264/241-271.1.ccls. and (inner adj core) and (outer adj layer)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
54	BRS	4	264/241-271.1.ccls. and boehm.in.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
55	BRS	20	"4460534"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
56	BRS	169	264/267.ccls. and core	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
57	BRS	878	264/271.1.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
58	BRS	1	"3638062".PN.	USPAT

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60	BRS	4	"5132081"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB

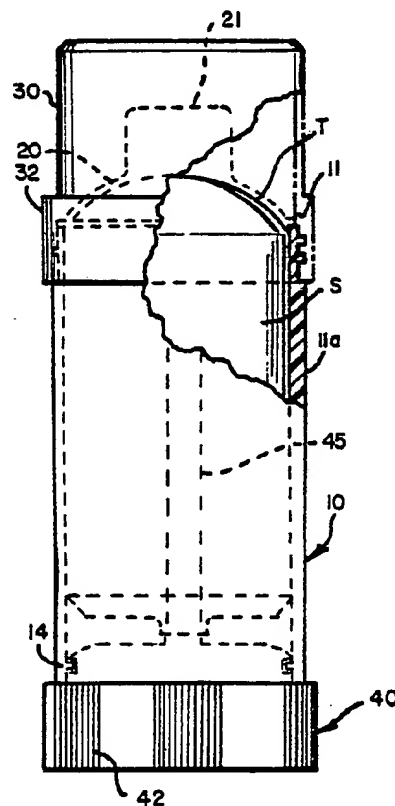
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59	2003/03/14 15:14			0
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## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>4</sup> :</b> <b>A45D 40/06, 40/08, 40/16</b> <b>B65B 37/00</b>	<b>A1</b>	<b>(11) International Publication Number: WO 86/ 06257</b> <b>(43) International Publication Date: 6 November 1986 (06.11.86)</b>
<b>(21) International Application Number:</b> PCT/US85/01339 <b>(22) International Filing Date:</b> 15 July 1985 (15.07.85) <b>(31) Priority Application Number:</b> 729,481 <b>(32) Priority Date:</b> 1 May 1985 (01.05.85) <b>(33) Priority Country:</b> US  <b>(71)(72) Applicant and Inventor:</b> OSSWALD, Otto [US/US]; 21200 Lassen Street, Chatsworth, CA 91311-4294 (US).  <b>(74) Agent:</b> ARNHEM, Erik, M.; 4113 Beverly Blvd., Los Angeles, CA 90004 (US).  <b>(81) Designated States:</b> AT, AU, BE (European patent), CH, DE, FR (European patent), GB, JP, NL, SE.		<b>Published</b> <i>With international search report.</i>
<b>(54) Title: CONTAINER FOR DEODORANT AND METHOD OF FILLING A DEODORANT CONTAINER</b>  <b>(57) Abstract</b> <p>A container and method for forming and dispensing a solid or partially emulsified liquid body of deodorant. The container has a barrel (10), a molding element (20) with a molding cavity for forming the top (T) of a deodorant stick (S) and a lid (30). Such a container is usually filled from the top and involves a number of assembly steps. The solution to the above is to invert the container for introduction of liquid and/or cream deodorant. The container is closed with a screw base (40) on which is mounted a slotted legged platform (50). The method allows efficient filling of the container and the removal of air while preventing leakage of deodorant.</p>		



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SPECIFICATION

Container for Deodorant and Method of Filling a  
Deodorant Container.

Background of the Invention

## (1) Field of the Invention

The container for deodorant and the method of filling a deodorant container are classified in class 222, subclass 390 and the like.

The invention relates to an improved container for a deodorant mass, e.g. a deodorant which is introduced in liquid form into the container but which then hardens to form a solid stick or body of deodorant.

The present invention relates also to a method of efficiently filling a deodorant container while the respective lid and dome are in place, with the dome functioning as a seal and serving to form the rounded application top of the resultant deodorant stick.

## (2) Prior Art

Containers for soap and other viscous materials are described in US Patent Nos. 1,254,667 to Fesler; 1,323,858 to Harwood; 2,695,118 to Taylor; and 2,831,606 to Alters.

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Specifically, U.S. Pat. No. 1,254,667 issued January 29, 1918, to J.B. Fesler, discloses a dispensing container for soap paste and other liquid and semiliquid material, which container can be disposed in the handle of a shaving brush. The container in accordance with U.S. Patent No. 1,254,667 is primarily concerned with a piston made of cork and reinforced by a plate. A thin layer of sealing material, such as glue, gelatin, paraffin or the like, is shaped by a hot metal tool and serves to prevent rotation of the piston when the respective screw is turned, but allowing travel of the piston in longitudinal direction through the reservoir when the screw is turned. The piston and the sealing material having been installed, the reservoir is filled from the top and the upper feed tube is installed.

U.S. Pat. No. 1,323,858 issued December 2, 1919, to S. L. Harwood, discloses a shaving cup with a container to hold a supply of shaving cream, a nozzle on the container, and a bowl into which the nozzle discharges, as well as valve means for controlling the flow of shaving cream. The valve means controls the nozzle by relative movements of the bowl, for example, turning thereof.

U.S. Pat. No. 2,695,118 issued November 23, 1954, to F. C. Taylor, also discloses a dispensing container, with reversible follower and threaded actuating rod, for shaving cream from a reservoir contained in the handle of the shaving brush.

U.S. Pat. No. 2,831,606 issued April 22, 1958, to M. E. Alters, discloses a method and device for kneading viscous material from its container.

It is also known in the art to fill the barrel of a deodorant container with a liquid deodorant which hardens

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on cooling. The prior art method includes filling the deodorant from the top down, then placing the dome on the surface of the mass, and placing the lid over the top of the container. The filled container must then pass along lengthy conveyer belts and through freezing tunnels, so that the mass has become solidified when finally going into the shipping boxes.

There has continued to remain, however, the need for a deodorant container which can be efficiently filled with a liquid and/or cream deodorant mass. There has also continued to remain the need for an improved method of filling a deodorant container.

(d) Summary of the Invention

The production of deodorant sticks is carried out with an improved container which comprises a longitudinal tubular barrel having a lid-receiving or applicator end and also having a deodorant receiving or bottom end remote from said applicator end. The cross section of the barrel can be round, oval or of any other desired shape. The applicator end retains the dome or similar molding element which serves to shape the top of the deodorant stick and this is held in place by the lid when this is in place. With the container standing on the lid or being supported so as to hold the deodorant receiving end in the receiving position, the container is filled and then closed by way of a screw base closure on which is mounted a slotted legged platform by placing the slotted legged platform down over the deodorant mass in the container. This will create a differential pressure sufficient enough to substantially prevent the liquid mass from leaking out when the container is placed right side up or upside down in shipment.

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The method of my invention serves to introduce a deodorant mass, for example liquid and/or cream deodorant into a container whereby the container is filled with a liquid or cream deodorant mass to form a deodorant stick or a similar body in the confines of the barrel of the container. The method includes placing a barrel, with lid and dome in place - to shape a rounded or similar top on the deodorant stick, on a conveyer belt or similar handling equipment. The cross section of the barrel can be round, oval or of any other desired shape. The container is positioned such that the end which is normally the bottom end of the container, is directed so as to receive the deodorant mass. Accordingly, the container is standing on the lid as it were.

In a subsequent step liquid deodorant mass is introduced through the receiving end until the container barrel is filled with the desired volume.

The container is closed with a screw base having a screw stick and with a slotted legged platform threaded on the screw stick. The screw base is irremovably snapped into place in the barrel by way of co-acting lips inside the barrel bottom end and outside on the screw base.

Included in the objects of the invention are:

To provide a simple method of filling a container with liquid and/or cream deodorant mass which precludes leaking while the container passes to shipping boxes.

To provide a simple and inexpensive container for a deodorant mass, which container includes a slotted legged platform which through differential pressurization prevents the deodorant mass from leaking out when the barrel is placed right end up or upside down during shipment.

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(e) Brief Description of the Drawings

FIG. 1 is a side elevation of a deodorant container in the upright or normal position of use.

FIG. 2 is a perspective exploded view showing the components of the deodorant container.

FIG. 3 is a cross section showing in greater detail the screw base for closing the bottom of the deodorant container, the slotted legged platform, and a portion of the tubular barrel thereat.

FIG. 4 is a bottom plan view of the platform.

FIG. 5 is a top plan view of the platform.

FIG. 6 is a cross section indicating the filling of the container.

FIG. 7 is a perspective view of the platform in the direction of the projecting legs.

FIG. 8 is a flow diagram of steps included in the method of the invention.

(f) Description of the Invention

In the drawings like reference characters designate like parts in the several views of the drawings.

FIG. 1 shows the deodorant container in the upright or normal position of use, with the broken away portions allowing viewing of part of a deodorant stick S.

The container includes a longitudinal tubular barrel

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10 with a generally continuous smooth outer wall 11a. This barrel is of hollow cylindrical configuration and firstly has an upper or applicator end 11 of slightly reduced outer diameter and, accordingly, presents a stepped portion 12 on which is formed an exterior and projecting thread bead 13. The barrel 10 also has a bottom end 14, and this terminus serves as the inlet or filling end for introducing liquid or cream deodorant mass into the confines of the barrel 10, as will be described in greater detail below. The barrel can have a round, oval or the like shape.

An annular and interiorly projecting retaining lip 15 is provided near the bottom end 14. As well, longitudinal axial stiffening ribs 16 extend from the wall 11a, see FIG. 2.

When filling the barrel 10, a dish-shaped dome element 20, or similar molding element, is partially inserted in the mouth at end 11. The dome element 20 presents a generally concave shape in the direction of end 14, for forming the rounded top T of the deodorant stick S. In some applications, the dome element 20 can have a flat handle portion 21 which serves to dislodge the dome element 20 from the top T of the stick S for the initial use of the deodorant stick S.

The dome element 20 is held in place by an upper cup-shaped lid or lid member 30. For cooperation with the thread bead 13 at the end 11 of the barrel 10, the cup-shaped lid 30 is correspondingly formed with interior thread formations or ridges 31. The configuration of the threads is such that the lid 30 can be removed from the barrel 10 upon a one-half turn more or less, say in counterclockwise direction, of the lid 30. Thus, the lid 30 can be removed from and secured at the end 11 of the tubular barrel 10 with the dome member 20 being clamped



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or secured in place.

It will be understood, of course, that any other locking or sealing arrangement without rotating configuration may be employed for securing the lid 30.

The lid 30 can be formed with or without an exterior stepped or raised portion 32 which facilitates screwing or placing of the lid 30 onto the barrel 10. The raised portion 32, in turn, can be provided with or without longitudinal ridges or similar friction elements 33 which make it easier to turn or remove lid 30 for securement to and release from the barrel 10.

It will be obvious that the depth or height of the lid 30 is sufficient to accommodate the dome element 20.

The assembly described thus far forms a receptacle for introduction of a predetermined volume of the liquid and/or cream mass of deodorant into it by way of the bottom or inlet end 14.

In accordance with one aspect of the method of my invention, the receptacle comprised of the barrel 10, dome element 20 and lid 30, is inverted, see FIG. 6, such that the inlet end 14 is in the "up" position. The end 11 is then in the "down" position. The container can, accordingly, be placed with the bottom end 14 "up" on a conveyer belt or filling line, not shown, and the desired volume of deodorant mass can be introduced through the inlet end 14 until the barrel is filled.

The container can be closed by a screw base 40, see FIGS. 1 to 3. The screw base 40 includes a hollow or solid cylindrical base 41, for example, with a similar outer

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diameter as the raised portion 32 of lid 30, and may also be provided with friction-providing ridges 42, however these are not a requirement for my invention. A top base 41 is provided a cylindrical and slightly conical projection 43, when viewed in cross section, see FIG. 3, of lesser diameter than that of base 41. The circumferential wall of projection 43 includes a substantially continuous outer annular lip 44. A longitudinal screw stick 45 with thread ridges 46 extends centrally from the projection 43.

The screw base 40 can be pushed, with projection 43 leading into the inlet end 14 of the barrel 10, compare arrow A in FIG. 3. The annular lip 44 is then lodged behind or engages at the retaining lip 15 of the barrel 10, so that the screw base 40 is irremovably retained at the bottom end 14, but can carry out turning movements for advancing and retracting the deodorant stick S.

A slotted legged platform 50 is arranged on the screw stick 45. For this, the generally round platform 50 has a short central hub 51 which in the assembled condition of the container is directed with its terminus towards the applicator end 11. The hub 51 is formed with reinforcing outer ridges 51a and it is formed with an interior thread formation 52, see FIG. 7. This interior thread formation 52 cooperates with the thread 46 of the screw stick 45.

When viewed in cross section, see FIG. 3, the platform 50 includes a flat central wall 53 which extends substantially perpendicularly with respect to the central axis of the container. Four air passages or slots 54 (FIGs. 4 and 5) are formed in the central wall 53. The platform 50 further includes a cylindrical wall section 55 and a conical or angularly inclined wall section 56. These two sections are joined to the flat central wall 53. The wall 53 supports the interiorly threaded hub 51 and four integral retention legs 57, all directed towards the applicator

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and 11. The retention legs 57 are tapered towards their respective terminus, and they are evenly distributed, see FIG. 5. The four mentioned slots 54 are generally provided between the retention legs 57. The legs 57 serve to engage the deodorant for a secure retention thereof on the platform 50 and for strength and support of the cross ridges or members 53a. It further controls, according to the length of the legs, the volume the container can hold during filling.

A single leg 58 (FIG. 4) is provided on the central wall 53 and directed towards the bottom end 14. This single leg 58 serves to stabilize the platform 50 at the screw base 40. The platform 50 also includes stiffeners 59 (FIG. 4).

The platform 50 serves to advance and retract the deodorant stick S by rotating or turning the screw base 40 which, via the screw stick 45, is connected to the platform 50. The platform 50 is also intended, by way of the four slots 54, to allow the removal of air in preparation for cooling of the liquid/and or cream deodorant mass.

The method indicated generally in FIG. 8 includes several steps. In accordance with my present invention, generally, the first step 60 calls for positioning a barrel 10, with lid 30 and dome 20 in place - to shape a rounded or similar configuration for top T of the deodorant stick S, with the barrel bottom end 14 up, on a conveyer belt or similar handling equipment. Accordingly, the applicator or dispenser end 11 will be directed in downward direction because the container is standing on the lid 30 as it were.

In the step 62, liquid and/or cream deodorant mass is introduced through bottom end 14 until the container is

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filled with the desired volume.

In step 64, the screw base 40, with slotted legged platform 50 threaded on screw stick 45, is irremovably snapped into place in the tubular barrel 10, when barrel 10 is filled, irremovably due to the co-acting lip 15 inside barrel 10 and lip 44 at the screw base 40.

Pressure differential is indicated in step 66, and this is achieved when the slotted legged platform 50 is pressed down over the deodorant mass in the tubular barrel 10, such that the air differential pressure is sufficient to create a differential between two measured pressures and substantially preventing the liquid mass from leaking out when the barrel 10 is placed right side up in a subsequent step.

Reference in this disclosure to details of the specific embodiment is not intended to restrict the scope of the appended claims, which themselves recite those features regarded as essential to the invention.

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I claim:

1. A container for a forming and dispensing a solid body of deodorant, said container comprising:

a longitudinal barrel with a substantially continuous wall, said barrel having a first applicator end and a second bottom end remote from said applicator end, said bottom end being adapted to allow introduction of liquid and/or cream deodorant mass into said barrel, and being adapted to allow closing thereof when desired volume of deodorant mass has been introduced into said container;

a molding element adapted to be at least temporarily positioned at said applicator end of said barrel, said molding element presenting a molding cavity in the direction of said bottom end of said barrel, for forming the top of a deodorant stick on introduction of a deodorant mass into said container.;

a lid member, said lid member being adapted to be secured at said applicator end of said barrel when said molding element is disposed in its molding position, and said lid member being adapted to be removed from said barrel when application of solid deodorant is to be effected;

a screw base for closing said barrel at the bottom end thereof, said screw base including a screw stick projecting from said screw base towards said applicator end of said barrel; and

a platform arranged on said screw stick, said platform being adapted to be moved by said screw stick for application of deodorant, said platform including legs projecting towards said applicator end and adapted to be imbedded in reference to liquid deodorant mass and including air passa-

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ges in the plane perpendicular to the axis of rotation of said screw stick.

2. The container according to claim 1 wherein said lid member and said first end of said barrel are releasably connected by formations adapted to engage in the manner of screw threads.

3. The container according to claim 1 wherein said molding element has a concave mold cavity for forming a deodorant stick with a desired applicator end.

4. The container according to claim 1 wherein said screw base includes an annular lip, and said barrel includes an interior retaining lip adapted to prevent removal of said screw base upon mounting said screw base on said barrel at the bottom end thereof.

5. The container according to claim 1 wherein said platform includes a substantially cylindrical wall portion directed towards said bottom with its terminus and an integral conical wall portion directed towards said applicator end with its terminus.

6. The container according to claim 1 wherein said barrel has a substantially round cross section.

7. The container according to claim 1 wherein said barrel has a substantially oval cross section.

8. The method of filling a deodorant container having an applicator end and a bottom end remote from said applicator end, said method comprising the steps of:

positioning the container such that the bottom end thereof is located so as to receive a desired volume of

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liquid heated deodorant mass;

filling the container through the bottom end thereof with the desired volume of liquid and/or cream deodorant mass; and

closing the bottom end of said container with a screw base having mounted thereon a slotted legged platform, said screw base being irremovably snapped into place, but allowing advancing and retracting a body of deodorant.

9. The method according to claim 8 and further comprising the step of pressing down the slotted legged platform over the deodorant mass in the container for provision of a differential pressure sufficient to substantially prevent the liquid mass from leaking out when the container is placed right side up or upside down in shipment.

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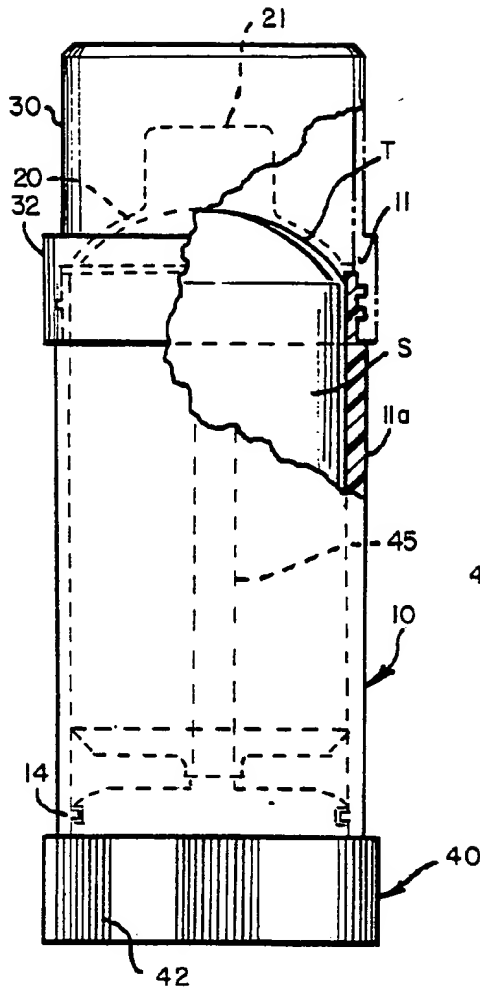


FIG. 1

FIG. 3

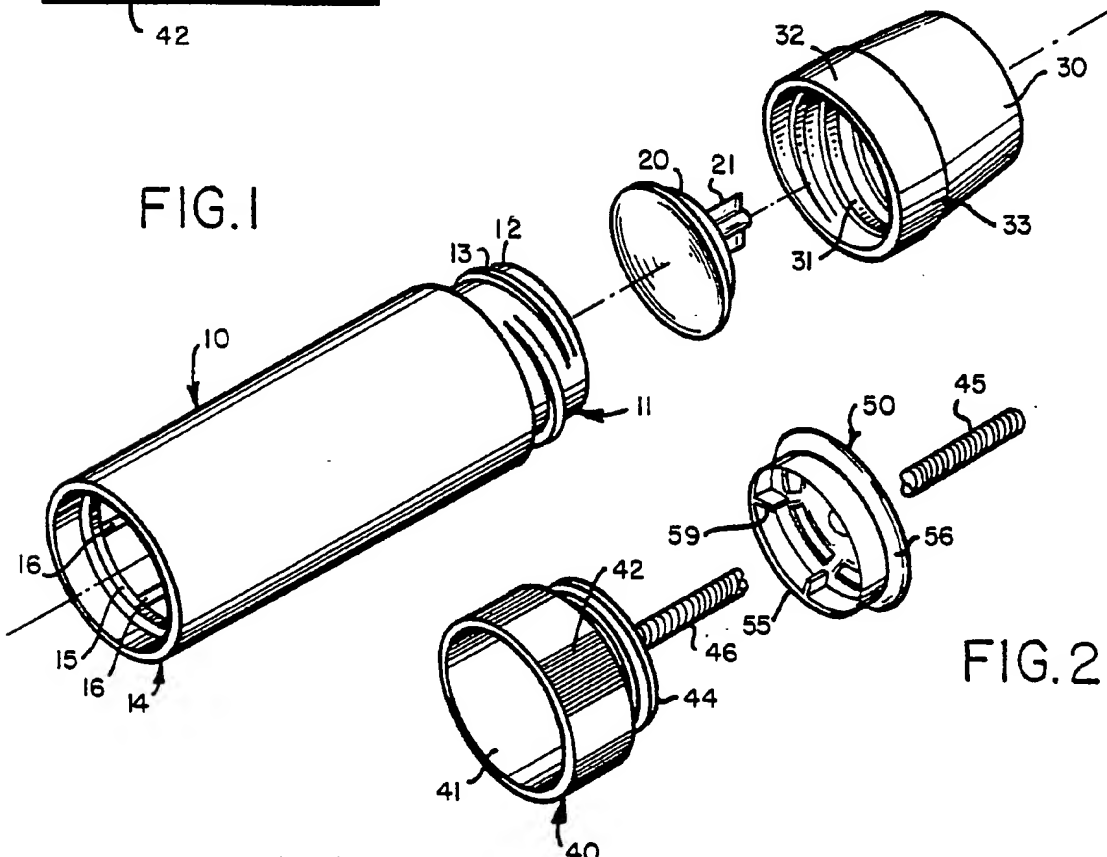
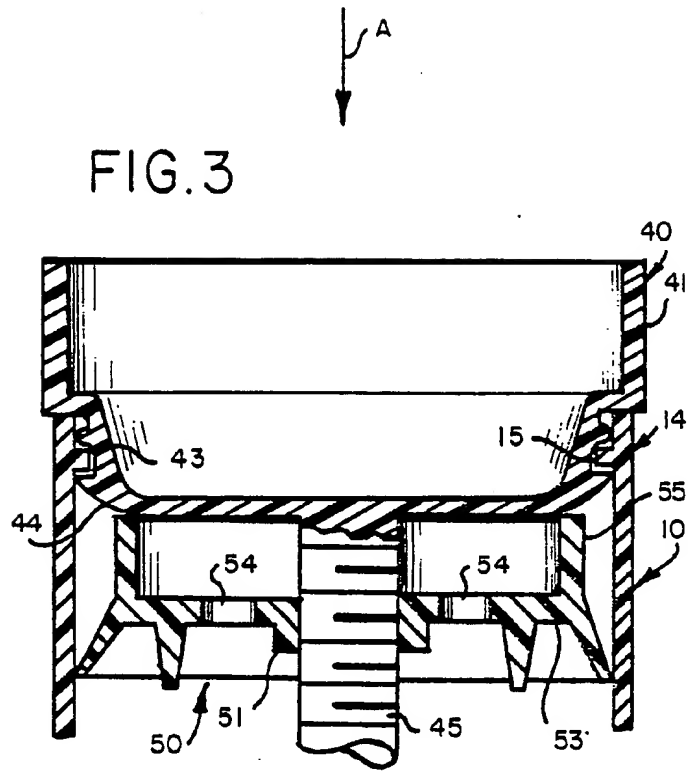


FIG. 2



2/2

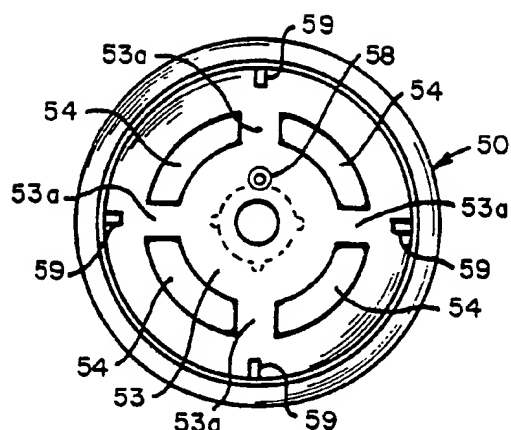


FIG. 4

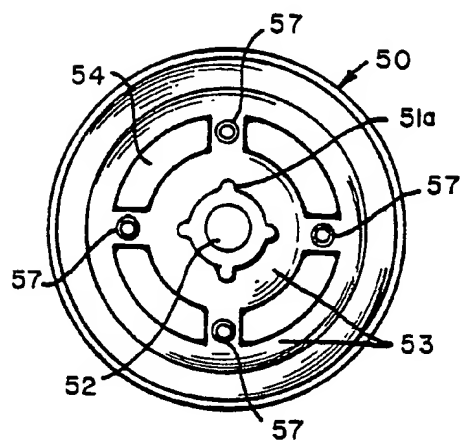


FIG. 5

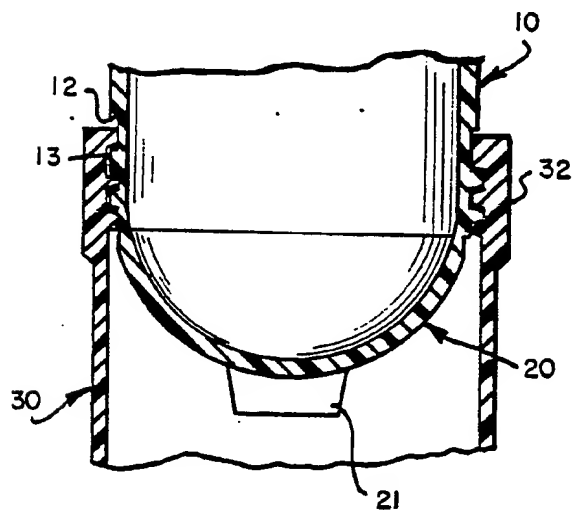
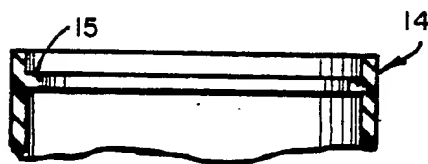


FIG. 6

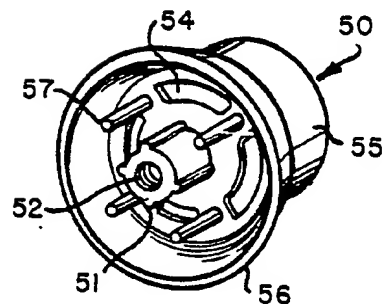
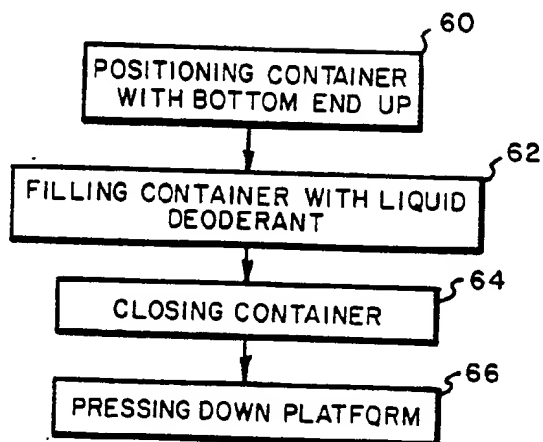


FIG. 7

FIG. 8



# INTERNATIONAL SEARCH REPORT

International Application No. **PCT/US85/0139**

<b>I. CLASSIFICATION OF SUBJECT MATTER</b> (If several classification symbols apply, indicate all) According to International Patent Classification (IPC) or to both National Classification and IPC INT. CL. A45D 40/06, 40/08, 40/16; B65B 37/00 US. CL. 401/68, 75, 175; 264/268																							
<b>II. FIELDS SEARCHED</b> <div style="text-align: center; font-size: small;">Minimum Documentation Searched<sup>4</sup></div> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 30%; text-align: left; padding: 5px;">Classification System</th> <th style="text-align: left; padding: 5px;">Classification Symbols</th> </tr> <tr> <td style="padding: 5px;">U.S.</td> <td style="padding: 5px;">401/68, 75, 172, 175 264/268</td> </tr> </table> <div style="text-align: center; font-size: x-small; margin-top: 5px;">Documentation Searched other than Minimum Documentation to the extent that such Documents are included in the Fields Searched<sup>4</sup></div>			Classification System	Classification Symbols	U.S.	401/68, 75, 172, 175 264/268																	
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<b>III. DOCUMENTS CONSIDERED TO BE RELEVANT<sup>14</sup></b> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 10%; text-align: left; padding: 5px;">Category<sup>8</sup></th> <th style="text-align: left; padding: 5px;">Citation of Document,<sup>15</sup> with indication, where appropriate, of the relevant passages<sup>17</sup></th> <th style="width: 20%; text-align: left; padding: 5px;">Relevant to Claim No.<sup>16</sup></th> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">X</td> <td style="padding: 5px;">US, A, 4,369,158 (Woodruff, et al) 18 January 1983</td> <td style="text-align: center; vertical-align: top; padding: 5px;">1-9</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">Y</td> <td style="padding: 5px;">US, A, 3,917,417 (Lang) 04 November 1975</td> <td style="text-align: center; vertical-align: top; padding: 5px;">1-9</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">Y</td> <td style="padding: 5px;">DE, A, 2807472 (Putz) 23 August 1979</td> <td style="text-align: center; vertical-align: top; padding: 5px;">1-9</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">Y</td> <td style="padding: 5px;">US, A, 1,194,545 (Remington) 15 August 1916 element #27</td> <td style="text-align: center; vertical-align: top; padding: 5px;">1</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">Y</td> <td style="padding: 5px;">FR, A, 379945 (Affouard) 22 November 1907 element "F" &amp; "G".</td> <td style="text-align: center; vertical-align: top; padding: 5px;">5</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">A</td> <td style="padding: 5px;">GB, A, 1182544 (Hardman) 25 February 1970</td> <td></td> </tr> </table>			Category <sup>8</sup>	Citation of Document, <sup>15</sup> with indication, where appropriate, of the relevant passages <sup>17</sup>	Relevant to Claim No. <sup>16</sup>	X	US, A, 4,369,158 (Woodruff, et al) 18 January 1983	1-9	Y	US, A, 3,917,417 (Lang) 04 November 1975	1-9	Y	DE, A, 2807472 (Putz) 23 August 1979	1-9	Y	US, A, 1,194,545 (Remington) 15 August 1916 element #27	1	Y	FR, A, 379945 (Affouard) 22 November 1907 element "F" & "G".	5	A	GB, A, 1182544 (Hardman) 25 February 1970	
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<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p><sup>*</sup> Special categories of cited documents:<sup>18</sup></p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"A" document member of the same patent family</p> </div> </div>																							
<b>IV. CERTIFICATION</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 5px;">           Date of the Actual Completion of the International Search<sup>1</sup>   <div style="text-align: center;">13 September 1985</div> </td> <td style="width: 50%; padding: 5px;">           Date of Mailing of this International Search Report<sup>2</sup>   <div style="text-align: center;">20 SEP 1985</div> </td> </tr> <tr> <td style="padding: 5px;">           International Searching Authority<sup>3</sup>   <div style="text-align: center;">ISA/US</div> </td> <td style="padding: 5px;">           Signature of Authorized Officer<sup>19</sup>  <div style="text-align: center;"><i>Steven A. Bratton</i></div> </td> </tr> </table>			Date of the Actual Completion of the International Search <sup>1</sup>  <div style="text-align: center;">13 September 1985</div>	Date of Mailing of this International Search Report <sup>2</sup>  <div style="text-align: center;">20 SEP 1985</div>	International Searching Authority <sup>3</sup>  <div style="text-align: center;">ISA/US</div>	Signature of Authorized Officer <sup>19</sup> <div style="text-align: center;"><i>Steven A. Bratton</i></div>																	
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